

WHAT IS CLAIMED IS:

1. A cardiac specific-synthetic promoter produced by a method comprising:
 - (a) introducing a library of randomized synthetic-promoter-recombinant expression constructs into a first-population of cells forming a first-test-population of cells;
 - (b) screening the first-test-population of cells for a first cardiac-specific-clone having a first-transcriptional activity that is higher than a control-transcriptional activity; and
 - (c) utilizing the cardiac specific-synthetic promoter from the first-cardiac-specific clone as the cardiac specific-synthetic promoter for a cardiac-specific-synthetic expression construct;wherein,

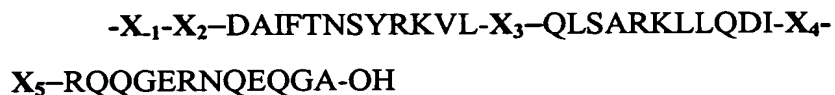
each of the randomized synthetic-promoter-recombinant expression constructs are operatively linked to a reporter gene to form a nucleic acid expression construct; and

the control-cardiac-specific-clone comprises a known-promoter operatively linked to the reporter gene forming a control-nucleic acid expression construct having the control-transcriptional activity in the first-population of cells.
2. The cardiac specific-synthetic promoter of claim 1, wherein the first-population of cells comprise cells *in vitro*.

3. The cardiac specific-synthetic promoter of claim 1, further comprising:
 - second-screening the first cardiac-specific-clone in a second-test-population of cells before utilizing the cardiac-specific-synthetic promoter as the cardiac-specific-synthetic promoter for the cardiac-specific-synthetic expression construct;
 - wherein,
 - the reporter gene from the first-cardiac-specific-clone having a second-transcriptional activity in the second-population of cells that is higher than a second-control-transcriptional activity of the control-cardiac-specific-clone introduced into the second-population of cells.
4. The cardiac specific-synthetic promoter claim 3, wherein the first-population of cells comprise cells *in vitro*, and the second-population of cells comprise cells *in vivo*.
5. The cardiac specific-synthetic promoter of claim 1, wherein cardiac specific synthetic promoter comprises c5-12 (SeqID#5).
6. The cardiac specific-synthetic promoter of claim 1, wherein cardiac specific synthetic promoter comprises c1-26 (SeqID#16); c2-26 (SeqID#17); c2-27 (SeqID#18); c5-5 (SeqID#19); c6-5 (SeqID#20); c6-16 (SeqID#21); or c6-39 (SeqID#22).
7. The cardiac specific-synthetic promoter of claim 1, wherein the cardiac-specific-synthetic promoter comprises a first-combination of cis-acting regulatory elements;
 - the first combination of cis-acting regulatory elements being selected from library of randomized synthetic-promoter-recombinants; and
 - the cardiac-specific synthetic promoter driving a transcriptional activity of the expressible gene in a population of cells that is higher than the transcriptional activity of the expressible gene driven by a control-promoter in the population of cells.

8. The cardiac specific-synthetic promoter of claim 7, wherein the cis-acting regulatory elements comprise SRE (SeqID#1); MEF-1 (SeqID#2); MEF-2 (SeqID#3); and TEF-1 (SeqID#4).
9. A method of using a cardiac specific-synthetic expression construct for expressing a gene in a cardiac cell comprising:
 - delivering into the cardiac cell a cardiac specific-synthetic expression construct;
 - wherein, the cardiac-specific-synthetic expression construct comprises a cardiac-specific-synthetic-promoter operatively-linked to an expressible gene.
10. The method of claim 9, wherein cardiac specific synthetic promoter comprises c5-12 (SeqID#5).
11. The method of claim 9, wherein cardiac specific synthetic promoter comprises c1-26 (SeqID#16); c2-26 (SeqID#17); c2-27 (SeqID#18); c5-5 (SeqID#19); c6-5 (SeqID#20); c6-16 (SeqID#21); or c6-39 (SeqID#22).
12. The method of claim 9, wherein the cardiac-specific-synthetic promoter comprises a first-combination of cis-acting regulatory elements;
 - the first combination of cis-acting regulatory elements being selected from library of randomized synthetic-promoter-recombinants; and
 - the cardiac-specific synthetic promoter driving a transcriptional activity of the expressible gene in a population of cells that is higher than the transcriptional activity of the expressible gene driven by a control-promoter in the population of cells.
13. The method of claim 12, wherein the cis-acting regulatory elements comprise SRE (SeqID#1); MEF-1 (SeqID#2); MEF-2 (SeqID#3); and TEF-1 (SeqID#4).
14. The method of claim 9, wherein delivering into the cardiac cell the cardiac specific-synthetic expression construct is via electroporation.

15. The method of claim 9, wherein the expressible-gene comprises a nucleic acid sequence that encodes a growth-hormone-releasing-hormone ("GHRH") or functional biological equivalent thereof.
16. The composition of claim 15, wherein the encoded GHRH is a biologically active polypeptide, and the encoded functional biological equivalent of GHRH is a polypeptide that has been engineered to contain a distinct amino acid sequence while simultaneously having similar or improved biological activity when compared to the GHRH polypeptide.
17. The method of claim 15, wherein the encoded GHRH or functional biological equivalent thereof is of formula (SEQID#6):



wherein the formula has the following characteristics:

X₁ is a D-or L-isomer of the amino acid tyrosine ("Y"), or histidine ("H");

X₂ is a D-or L-isomer of the amino acid alanine ("A"), valine ("V"), or isoleucine ("I");

X₃ is a D-or L-isomer of the amino acid alanine ("A") or glycine ("G");

X₄ is a D-or L-isomer of the amino acid methionine ("M"), or leucine ("L");

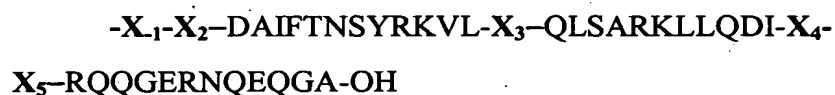
X₅ is a D-or L-isomer of the amino acid serine ("S") or asparagine ("N");

or a combination thereof.

18. The method of claim 9, wherein the cardiac specific-synthetic expression construct comprises SeqID No: 7, SeqID No: 8, SeqID No: 9, SeqID No: 10, SeqID No: 11, SeqID No: 12, SeqID No: 13, SeqID No: 14, or SeqID No: 15.

19. A method of synthesizing a cardiac specific synthetic expression construct comprising:
- (a) identifying a cardiac-specific promoter; and
 - (b) operatively-linking the cardiac-specific promoter to an expressible gene to form the cardiac specific synthetic expression construct;
- wherein; the cardiac-specific-synthetic promoter comprises a first-combination of cis-acting regulatory elements; and
- the expressible gene comprises a nucleic acid expression construct with or without an operable-linked promoter.
20. The method of claim 19, wherein cardiac specific synthetic promoter comprises c5-12 (SeqID#5).
21. The method of claim 19, wherein cardiac specific synthetic promoter comprises c1-26 (SeqID#16); c2-26 (SeqID#17); c2-27 (SeqID#18); c5-5 (SeqID#19); c6-5 (SeqID#20); c6-16 (SeqID#21); or c6-39 (SeqID#22).
22. The method of claim 19, wherein the first combination of cis-acting regulatory elements comprise being selected from library of randomized synthetic-promoter-recombinants; and
- the cardiac-specific synthetic promoter driving a transcriptional activity of the expressible gene in a population of cells that is higher than the transcriptional activity of the expressible gene driven by a control-promoter in the population of cells.
23. The method of claim 22, wherein the cis-acting regulatory elements comprise SRE (SeqID#1); MEF-1 (SeqID#2); MEF-2 (SeqID#3); and TEF-1 (SeqID#4).
24. The method of claim 19, wherein delivering into the cardiac cell the cardiac specific-synthetic expression construct is via electroporation.

25. The method of claim 19, wherein the expressible-gene comprises a nucleic acid sequence that encodes a growth-hormone-releasing-hormone ("GHRH") or functional biological equivalent thereof.
26. The composition of claim 25, wherein the encoded GHRH is a biologically active polypeptide, and the encoded functional biological equivalent of GHRH is a polypeptide that has been engineered to contain a distinct amino acid sequence while simultaneously having similar or improved biological activity when compared to the GHRH polypeptide.
27. The method of claim 25, wherein the encoded GHRH or functional biological equivalent thereof is of formula (SEQID#6):



wherein the formula has the following characteristics:

X_1 is a D-or L-isomer of the amino acid tyrosine ("Y"), or histidine ("H");

X_2 is a D-or L-isomer of the amino acid alanine ("A"), valine ("V"), or isoleucine ("I");

X_3 is a D-or L-isomer of the amino acid alanine ("A") or glycine ("G");

X_4 is a D-or L-isomer of the amino acid methionine ("M"), or leucine ("L");

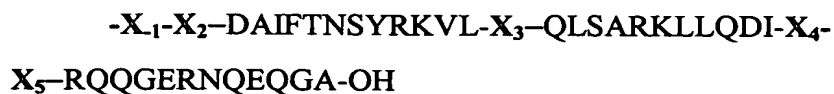
X_5 is a D-or L-isomer of the amino acid serine ("S") or asparagine ("N");

or a combination thereof.

28. The method of claim 19, wherein the cardiac specific-synthetic expression construct comprises SeqID No: 7, SeqID No: 8, SeqID No: 9, SeqID No: 10, SeqID No: 11, SeqID No: 12, SeqID No: 13, SeqID No: 14, or SeqID No: 15.

29. A method of using a cardiac specific-synthetic expression construct for expressing a gene in a cardiac cell comprising:
- delivering into the cardiac cell a cardiac specific-synthetic expression construct;
- wherein, the cardiac-specific-synthetic expression construct comprises a cardiac-specific-synthetic-promoter (SeqID No: 5) operatively-linked to an expressible gene.
30. The method of claim 29, wherein the expressible-gene comprises a nucleic acid sequence that encodes a growth-hormone-releasing-hormone ("GHRH") or functional biological equivalent thereof.
31. The method of claim 30, wherein the encoded GHRH is a biologically active polypeptide, and the encoded functional biological equivalent of GHRH is a polypeptide that has been engineered to contain a distinct amino acid sequence while simultaneously having similar or improved biological activity when compared to the GHRH polypeptide.

32. The method of claim 30, wherein the encoded GHRH or functional biological equivalent thereof is of formula (SEQID#6):



wherein the formula has the following characteristics:

X₁ is a D-or L-isomer of the amino acid tyrosine ("Y"), or histidine ("H");

X₂ is a D-or L-isomer of the amino acid alanine ("A"), valine ("V"), or isoleucine ("I");

X₃ is a D-or L-isomer of the amino acid alanine ("A") or glycine ("G");

X₄ is a D-or L-isomer of the amino acid methionine ("M"), or leucine ("L");

X₅ is a D-or L-isomer of the amino acid serine ("S") or asparagine ("N");

or a combination thereof.

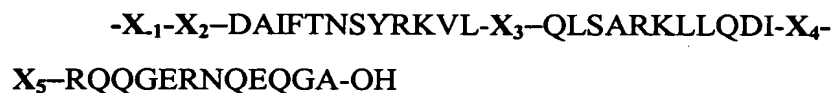
33. The method of claim 29, wherein the cardiac specific-synthetic expression construct comprises SeqID No: 7, SeqID No: 8, SeqID No: 9, SeqID No: 10, SeqID No: 11, SeqID No: 12, SeqID No: 13, SeqID No: 14, or SeqID No: 15.

34. A method of using a cardiac specific-synthetic expression construct for expressing a gene in a cardiac cell comprising:

delivering into the cardiac cell a cardiac specific-synthetic expression construct;

wherein, the cardiac-specific-synthetic expression construct comprises a cardiac-specific-synthetic-promoter (SeqID No: 18) operatively-linked to an expressible gene.

35. The method of claim 34, wherein the expressible-gene comprises a nucleic acid sequence that encodes a growth-hormone-releasing-hormone ("GHRH") or functional biological equivalent thereof.
36. The method of claim 35, wherein the encoded GHRH is a biologically active polypeptide, and the encoded functional biological equivalent of GHRH is a polypeptide that has been engineered to contain a distinct amino acid sequence while simultaneously having similar or improved biological activity when compared to the GHRH polypeptide.
37. The method of claim 35, wherein the encoded GHRH or functional biological equivalent thereof is of formula (SEQID#6):



wherein the formula has the following characteristics:

X_1 is a D-or L-isomer of the amino acid tyrosine ("Y"), or histidine ("H");

X_2 is a D-or L-isomer of the amino acid alanine ("A"), valine ("V"), or isoleucine ("I");

X_3 is a D-or L-isomer of the amino acid alanine ("A") or glycine ("G");

X_4 is a D-or L-isomer of the amino acid methionine ("M"), or leucine ("L");

X_5 is a D-or L-isomer of the amino acid serine ("S") or asparagine ("N");

or a combination thereof.

38. The method of claim 34, wherein the cardiac specific-synthetic expression construct comprises SeqID No: 7, SeqID No: 8, SeqID No: 9, SeqID No: 10, SeqID No: 11, SeqID No: 12, SeqID No: 13, SeqID No: 14, or SeqID No: 15.